

Appl. No. 10/676,551
Amdt. Dated August 10, 2006
Reply to Office Action of June 29, 2006

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Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A machine tool installation for laser cutting of sheet metal workpieces comprising:

(a) a workpiece support having a multiplicity of parallel spaced grid elements providing the upper surface thereof;

(b) a machine frame having a generally vertical rear wall and an arm extending therefrom over said workpiece support, said grid elements of said workpiece support extending perpendicularly to said vertical wall of said machine frame, said vertical rear wall having a recess therein opening adjacent said workpiece support;

(c) a laser cutting unit supported on said arm of said machine frame and including a laser cutting head, said cutting head being movable in X and Y axes over said workpiece support to cut parts from a sheet metal workpiece disposed thereon;

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(d) an unloading unit for lifting the cut parts from said workpiece support and transporting them to a discharge station, said unloading unit having (i) a frame movably supporting (ii) a pair of opposed fork assemblies, (iii) a fork housing supporting said frame and enclosing (iv) a drive assembly for moving said fork assemblies between open and closed positions, said fork assemblies being spaced apart in the open position and having their opposed ends in adjacent relationship in the closed position, one of said fork assemblies being movable into said frame recess in said open position, said fork assemblies in said closed position being movable vertically between said grid elements of said support to lift the parts from said grid elements, said unloading unit also having (iv) a support housing on which said fork housing is mounted for vertical movement, and (v) drive means for effecting vertical movement of said fork housing relative to said machine frame and said workpiece support, said unloading unit being movable on said machine frame between an operative position adjacent said workpiece support and the discharge station;

(e) drive means for moving said unloading unit between the operative position and discharge station; and

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(f) a controller operable to (i) move said unloading unit between said discharge station and said operative position, (ii) move said fork assemblies into the open position, move said fork housing downwardly to position the fingers for movement into the spacing between said grid elements, (iii) move said fork assemblies into the closed position below the upper surface of said workpiece support, (iv) move said unloading unit upwardly to lift the cut parts and skeleton from said workpiece support, and (v) discharge the parts and skeleton on said unloading unit at the discharge station.

2. (original) The machine tool installation in accordance with Claim 1 wherein said fork assemblies are comprised of a multiplicity of forks cooperatively dimensioned to move into the spacing between said grid elements and below the parts and skeleton on the upper surface of said grid elements.

3. (original) The machine tool installation in accordance with Claim 2 wherein said forks are of generally C-shaped configuration.

4. (original) The machine tool installation in accordance with Claim 1 wherein said drive assembly includes a motor and a chain drive connected to said fork assemblies.

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5. (original) The machine tool installation in accordance with Claim 1 wherein the parts and skeleton are deposited at the discharge station by moving said fork assemblies into the open position.

6. (currently amended) The machine tool installation in accordance with Claim 1 wherein said vertical rear wall of said frame has a multiplicity of said recesses therein opening adjacent said workpiece support and into which one fork assembly is movable when the fork assemblies are moved into their open position, said open position enabling the fork assemblies to be moved downwardly on opposite sides of said workpiece support to a position in which the forks can move between the grid elements when the fork assemblies are moved into the closed position.

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7. (currently amended) A machine tool installation for laser cutting of sheet workpieces comprising:

(a) a workpiece support having a multiplicity of parallel spaced grid elements providing the upper surface thereof;

(b) a machine frame having a generally vertical rear wall and an arm extending therefrom over said workpiece support, said grid elements of said workpiece support extending perpendicularly to said vertical wall of said machine frame, said vertical rear wall having a recess therein opening adjacent said workpiece support;

(c) a laser cutting unit supported on said arm of said machine frame and including a laser cutting head, said cutting head being movable in X and Y axes over said workpiece support to cut parts from a sheet metal workpiece disposed thereon;

(d) an unloading unit for lifting the cut parts from said workpiece support and transporting them to a discharge station, said unloading unit having (i) a frame movably supporting (ii) a pair of opposed fork assemblies, said fork assemblies being comprised of a multiplicity of forks of generally C-shaped configuration and cooperatively dimensioned to move into the spacing between said grid elements of said support and below the parts and skeleton on the upper surface of said grid elements, (iii) a fork housing supporting said frame and enclosing (iv) a drive assembly for moving said fork assemblies between open and

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closed positions, said fork assemblies being spaced apart in the open position and having their opposed ends in adjacent relationship in the closed position to lift the parts from said grid elements of said workpiece support, one of said fork assemblies being movable into said frame recess in said open position, said unloading unit also having (iv) a support housing on which said fork housing is mounted for vertical movement, and (v) drive means for effecting vertical movement of said fork housing relative to said machine frame and said workpiece support, said unloading unit being movable on said machine frame between an operative position adjacent said workpiece support and the discharge station;

(e) drive means for moving said unloading unit between the operative position and discharge station; and

(f) a controller operable to (i) move the unloading unit between said discharge station and said operative position (ii) move said fork assemblies into the open position and the fork housing downwardly to position the fingers for movement into the spacing between the grid elements, (iii) move said fork assemblies into the closed position below the upper surface of said workpiece support, (iv) move said unloading unit upwardly to lift the cut parts and skeleton from said workpiece support, and (v) discharge the parts and skeleton on said unloading unit at the discharge station.

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8. (original) The machine tool installation in accordance with Claim 7 wherein said drive assembly includes a motor and a chain drive connected to said fork assemblies.

9. (original) The machine tool installation in accordance with Claim 7 wherein the parts and skeleton are deposited at the discharge station by moving said fork assemblies into the open position.

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10. (currently amended) A machine tool installation for laser cutting of sheet workpieces comprising:

- (a) a workpiece support having a multiplicity of parallel spaced grid elements providing the upper surface thereof;
- (b) a machine frame having a generally vertical rear wall and an arm extending therefrom over said workpiece support, said grid elements of said workpiece support extending perpendicularly to said vertical wall of said machine frame, said vertical rear wall of said frame has a multiplicity of recesses therein opening adjacent said workpiece support;
- (c) a laser cutting unit supported on said arm of said machine frame and including a laser cutting head, said cutting head being movable in X and Y axes over said workpiece support to cut parts from a sheet metal workpiece disposed thereon;
- (d) an unloading unit for lifting the cut parts from said workpiece support and transporting them to a discharge station, said unloading unit having (i) a frame movably supporting (ii) a pair of opposed fork assemblies, (iii) a fork housing supporting said frame and enclosing (iv) a drive assembly for moving said fork assemblies between open and closed positions, said fork assemblies being spaced apart in the open position and having their opposed ends in adjacent relationship in the closed position, said unloading unit also having (iv) a support housing on which said fork housing is mounted for vertical movement, and (v) drive means for

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effecting vertical movement of said fork housing relative to said machine frame and said workpiece support, said unloading unit being movable on said machine frame between an operative position adjacent said workpiece support and the discharge station, one fork assembly being movable into said recesses in said frame rear wall when the fork assemblies are moved into their open position to enable the fork assemblies to be moved downwardly on opposite sides of said workpiece support to a position in which the forks can move between the grid elements when the fork assemblies are moved into the closed position, said fork assemblies are being comprised of a multiplicity of forks cooperatively dimensioned to move into the spacing between said grid elements and below the parts and skeleton on the upper surface of said grid elements, and said forks are being of generally C-shaped configuration;

(e) drive means for moving said unloading unit on said machine frame between the operative position and discharge station; and

(f) a controller operable to (i) move the unloading unit between said discharge station and said operative position (ii) move said fork assemblies into the open position and the fork housing downwardly to position the fingers for movement into the spacing between the grid elements, (iii) move said fork assemblies into the closed position below the upper surface of said workpiece support, (iv) move said unloading unit upwardly to lift the cut parts and skeleton from said workpiece support, and (v) discharge the parts and skeleton on said unloading unit at the discharge station.

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11. (original) The machine tool installation in accordance with Claim 10 wherein said drive assembly includes a motor and a chain drive connected to said fork assemblies.

12. (original) The machine tool installation in accordance with Claim 10 wherein the parts and skeleton are deposited at the discharge station by moving said fork assemblies into the open position.